IN THE CLAIMS

Please amend claims 1, 2, 5, 6, 14, 15, and 15, cancel claims 3, 4, 16, 17, and 19, and add new claims 31-49, as follows:

1. (Currently Amended) A spin valve sensor, comprising:

a sensor stack structure which includes:

a free layer structure;

an antiparallel (AP) pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP pinned layer structure;

a capping layer structure formed over the sensor stack structure; and

the capping layer structure comprising ~~a~~ an oxidized cobalt layer.

2. (Currently Amended) The spin valve sensor of claim 1, wherein the oxidized cobalt layer comprises pure cobalt without iron content.

3. (Canceled)

4. (Canceled)

5. (Currently Amended) The spin valve sensor of claim 1, wherein the capping layer structure further comprises a tantalum layer formed over the oxidized cobalt layer.

6. (Currently Amended) The spin valve sensor of claim 1, further comprising:

~~wherein the cobalt layer comprises one of pure cobalt and oxidized cobalt; and~~

wherein the capping layer structure further comprises a tantalum layer formed over the oxidized cobalt layer.

7. (Original) The spin valve sensor of claim 1, wherein the free layer structure includes at least one of cobalt-iron and nickel iron.

8. (Original) The spin valve sensor of claim 1, wherein the AP pinned layer structure comprises cobalt or cobalt alloy.

9. (Original) The spin valve sensor of claim 1, wherein the free layer is formed between the capping layer structure and the AP pinned layer structure.

10. (Original) The spin valve sensor of claim 1, wherein the AP pinned layer structure is formed between the capping layer structure and the free layer structure.

11. (Original) The spin valve sensor of claim 1, wherein the AP pinned layer structure comprises:

a pinned layer;

a reference layer; and

an antiparallel coupling layer between the pinned layer and the reference layer.

12. (Original) The spin valve sensor of claim 1, wherein a coercivity H_c of the spin valve sensor is less than 5 Oersteds.

13. (Original) The spin valve sensor of claim 1, wherein a magnetostriction of the spin valve sensor is negative.

14. (Currently Amended) A disk drive, comprising:

a housing;

a magnetic disk rotatably supported in the housing;

a magnetic head assembly;

a support mounted in the housing for supporting the magnetic head assembly so as to be in a transducing relationship with the magnetic disk;

a spindle motor for rotating the magnetic disk;

an actuator positioning means connected to the support for moving the magnetic head assembly to multiple positions with respect to said magnetic disk;

a processor connected to the magnetic head assembly, to the spindle motor, and to the actuator for exchanging signals with the magnetic head assembly for controlling movement of the magnetic disk and for controlling the position of the magnetic head assembly;

the magnetic head assembly including a read head;

the read head including a spin valve sensor;

the spin valve sensor comprising:

a sensor stack structure which includes:

a free layer structure;

an antiparallel (AP) pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP pinned layer structure;

a capping layer structure formed over the sensor stack structure; and

the capping layer structure comprising ~~a~~ an oxidized cobalt layer.

15. (Currently Amended) The disk drive of claim 14, wherein the oxidized cobalt layer comprises pure cobalt without iron content.

16. (Canceled)

17. (Canceled)

18. (Currently Amended) The disk drive of claim 14, wherein the capping layer structure further comprises a tantalum layer formed over the oxidized cobalt layer.

19. (Canceled)

20. (Original) The disk drive of claim 14, wherein the free layer structure is formed between the capping layer structure and the AP pinned layer structure.

21. (Original) The disk drive of claim 14, wherein the AP pinned layer structure is formed between the capping layer structure and the free layer structure.

22. (Original) The disk drive of claim 14, wherein a coercivity H_c of the spin valve sensor is less than 5 Oersteds.

23. (Original) The disk drive of claim 14, wherein a magnetostriction of the spin valve sensor is negative.

24. (Withdrawn) A method of forming a spin valve sensor for magnetic head, comprising:

forming a sensor stack which includes a free layer structure and an antiparallel (AP) pinned layer structure which are separated by a non-magnetic electrically conductive spacer layer, and

forming, over the sensor stack structure, a capping layer structure which includes a cobalt layer.

25. (Withdrawn) The method of claim 24, wherein the cobalt layer comprises pure cobalt.

26. (Withdrawn) The method of claim 24, wherein the cobalt layer comprises oxidized cobalt.

27. (Withdrawn) The method of claim 24, wherein the act of forming the capping layer structure comprises the further act of:

oxidizing the cobalt layer.

28. (Withdrawn) The method of claim 24, wherein the cobalt layer comprises cobalt-iron.

29. (Withdrawn) The method of claim 24, wherein the act of forming the capping layer structure comprises the further act of:

forming a tantalum layer over the cobalt layer.

30. (Withdrawn) The method of claim 24, wherein the act of forming the capping layer structure comprises further acts of:

oxidizing the cobalt layer; and

forming a tantalum layer over the oxidized cobalt layer.

31. (New) A spin valve sensor, comprising:

a sensor stack structure which includes:

a free layer structure;

an antiparallel (AP) pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP pinned layer structure;

a capping layer structure formed over the sensor stack structure;

the capping layer structure comprising:

a cobalt layer comprising one of pure cobalt and oxidized cobalt; and

a tantalum layer formed over the cobalt layer.

32. (New) The spin valve sensor of claim 31, wherein the cobalt layer consists of pure cobalt.

33. (New) The spin valve sensor of claim 31, wherein the cobalt layer consists of oxidized cobalt.

34. (New) The spin valve sensor of claim 31, wherein the free layer structure includes at least one of cobalt-iron and nickel iron.

35. (New) The spin valve sensor of claim 31, wherein the AP pinned layer structure comprises cobalt or cobalt alloy.

36. (New) The spin valve sensor of claim 31, wherein a coercivity H_c of the spin valve sensor is less than 5 Oersteds.

37. (New) The spin valve sensor of claim 31, wherein a magnetostriction of the spin valve sensor is negative.

38. (New) A disk drive, comprising:

a housing;

a magnetic disk rotatably supported in the housing;

a magnetic head assembly;

a support mounted in the housing for supporting the magnetic head assembly so as to be in a transducing relationship with the magnetic disk;

a spindle motor for rotating the magnetic disk;

an actuator positioning means connected to the support for moving the magnetic head assembly to multiple positions with respect to said magnetic disk;

a processor connected to the magnetic head assembly, to the spindle motor, and to the actuator for exchanging signals with the magnetic head assembly for controlling movement of the magnetic disk and for controlling the position of the magnetic head assembly;

the magnetic head assembly including a read head;

the read head including a spin valve sensor;

the spin valve sensor comprising:

a sensor stack structure which includes:

a free layer structure;

an antiparallel (AP) pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP pinned layer structure;

a capping layer structure formed over the sensor stack structure;

the capping layer structure comprising:

a cobalt layer comprising one of pure cobalt and oxidized cobalt; and

a tantalum layer formed over the cobalt layer.

39. (New) The disk drive of claim 38, wherein the cobalt layer consists of pure cobalt.

40. (New) The disk drive of claim 38, wherein the cobalt layer consists of oxidized cobalt.

41. (New) The disk drive of claim 38, wherein the free layer structure is formed between the capping layer structure and the AP pinned layer structure.

42. (New) The disk drive of claim 38, wherein the AP pinned layer structure is formed between the capping layer structure and the free layer structure.

43. (New) The disk drive of claim 38, wherein a coercivity H_c of the spin valve sensor is less than 5 Oersteds.

44. (New) The disk drive of claim 38, wherein a magnetostriction of the spin valve sensor is negative.

45. (New) A spin valve sensor, comprising:

a sensor stack structure which includes:

a free layer structure;

an antiparallel (AP) pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP pinned layer structure;

a capping layer structure formed over the sensor stack structure; and

the capping layer structure comprising a pure cobalt layer without iron content.

46. (New) The spin valve sensor of claim 45, wherein the pure cobalt layer without iron content consists of oxidized cobalt.

47. (New) The spin valve sensor of claim 45, wherein the capping layer structure further comprises:

a tantalum layer formed over the pure cobalt layer.

48. (New) The spin valve sensor of claim 45, wherein a coercivity H_c of the spin valve sensor is less than 5 Oersteds.

49. (New) The spin valve sensor of claim 45, wherein a magnetostriction of the spin valve sensor is negative.